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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,449	12/28/2004	Hermann Bach	Metal 1319-WCG	9415

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EXAMINER	
SMITH, JENNIFER A	

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/501,449	BACH ET AL.	
	Examiner	Art Unit	
	JENNIFER A. SMITH	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) *10 and 11* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 12-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

Claims 10 and 11 remain withdrawn from consideration.

Claims 1-9 and 12-15 are pending and presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-9, 12, 14, and 15 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Murray et al. (US Patent No. 5,648,585), as generally set forth in the Office action of 06/24/2008.

In regard to claim 1, the Murray reference teaches regeneration of a zeolite catalyst. The catalyst bed temperature is kept at 343°C under a nitrogen flow. The temperature is then increased up to 485°C. Air flow is continued while maintaining the bed temperatures at 487°C until the temperatures stat to fall, at which time nitrogen flow is removed from the system. The bed is maintained under air at 487°C. The reactor was cooled to a temperature of 288°C and purged with nitrogen [See Column 15, lines 5-37]. Zeolite materials, such as crystalline aluminosilicates, are known to have catalytic properties for many hydrocarbon processes such as isomerization of linear olefins to their corresponding methyl branched isoolefins [See Field of the Invention or Column 1, lines 39-42].

The Murray reference does not teach the cooling the catalyst after a first stage to a temperature below that of the first stage before the introduction of oxygen.

It would have been obvious to one of skill in the art, at the time of Applicant's invention, to decrease the temperature of the reactor before the addition of oxygen because Murray notes that it is important in the regeneration process to avoid runaway exotherms above the desired maximum regeneration temperatures of the reactor. This can be accomplished by a suitable increasing of the temperature or by an increasing of the oxygen concentration in the oxygen-containing gas or both during the regeneration process in order to obtain steady burn of the coke [See Column 10, lines 37-43]. Therefore it is well-known in the art that temperature control in the zeolite regeneration

process is an essential consideration and one would have been motivated to optimize the temperature within the prior art conditions through routine experimentation. Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05 II. A.

In regard to claims 3 and 4, the Murray reference teaches times will range from about 5 to about 200 hours, preferably from about 10 to 100 hours [See Column 10, lines 46-47]. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP 2144.05 I. In addition, it would have been obvious to one of skill in the art to run the regeneration process taught in the Murray reference for a time sufficient to burn-off essentially all of the coke.

In regard to claims 5, 14, and 15 the Murray reference teaches increasing the temperature of the nitrogen/air mixture at a rate of 3-6°C per hour and the temperature is kept constant for 12 hours [See Column 15, lines 22-33].

In regard to claim 6, the Murray reference teaches introducing air into the reactor at 3.7 vol% [See Column 15, lines 13-14] and increased in increments as decoking reaches completion up to between 40 vol% and 100 vol% [See Column 15, lines 26-32].

In regard to claim 12, the Murray reference fails to teach these such olefins. However, Murray teaches an increasing demand for high octane gasoline blends including the C_5 to C_7 olefins. To obtain these it is desirable to convert a lower alkene (below C_5) [See Column 1, lines 15-25].

In regard to claims 7-9, the Murray reference does not explicitly teach any further processing steps of the steams which are discharged from the reactor.

However, it would have been obvious to one of ordinary skill in the art to process the nitrogen or nitrogen/air streams via any well-known industry methods including thermal treatment to remove hydrocarbons, release into the atmosphere, or recirculation any desirable amount through the process for further application to the decoking process.

Claims 2-9 and 13 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Murray et al. (US Patent No. 5,648,585) in view of Confuorto et al. (US Patent No. 6,551,565 B2), as generally set forth in the Office action of 06/24/2008.

The Murray reference teaches the limitations of claim 1 but fails to teach steam in the nitrogen/air mixture.

The Confuorto reference teaches a process for removing coke from a hydrocarbon catalyst. The coked catalyst is, additionally, stripped of volatiles, usually with steam, in a catalyst stripper [See Column 1, lines 28-31].

It would have been obvious to one of skill in the art to include a steam containing stream like that taught in the Confuorto reference in the decoking process taught by Murray because steam acts to remove organic coatings which may accumulate on the zeolite catalyst [See Confuorto, Column 1, lines 28-31].

Dependent claims 3-9 are rejected for the same reasons given above.

In regard to claim 13, the volume percent of steam in the gas stream is a result-effective variable which achieves the recognizable result of removing the organic volatile components from a coked catalyst [See Confuorto, Column 1, lines 28-31]. The determination of the optimum or workable ranges of volume% steam may be characterized as routine experimentation. See MPEP 2144.05 B. Because steam is a component of the nitrogen/air mixture it would have been obvious to include it in an

amount comparable to nitrogen and air to simultaneously strip the zeolite of organic coatings and remove coke.

Response to Arguments

Applicant's arguments filed on 12/11/2008 have been fully considered but they are not persuasive.

Applicants argue Murray et al. and Confuorto et al. fail to teach or suggest a step wherein the reactor is rinsed with a nitrogen stream heated to an entrance temperature of 460°C to 500°C to rinse air from the zeolite catalyst as required by claim 1, rinsing with hot gas.

Air flow is continued while maintaining the bed temperatures at 487°C until the temperatures stat to fall, at which time nitrogen flow is removed from the system. The Murray reference teaches maintaining the reaction bed at a temperature under air at 487°C. The reactor is then cooled to a temperature of 288°C and purged with nitrogen [See Column 15, lines 5-37].

Murray et al. teach purging air with nitrogen gas, but at a lower temperature range. It would have been obvious to one of skill in the art, at the time of Applicant's invention, to optimize the temperature within the prior art conditions through routine experimentation. Generally, differences in concentration or temperature will not support

the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05 II. A.

Conclusion

Claims 1-9 and 12-15 are rejected.

No claims are allowed.

THIS ACTION IS MADE FINAL.

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. SMITH whose telephone number is (571)270-3599. The examiner can normally be reached on Monday - Friday, 8:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.A. LORENGO/
Supervisory Patent Examiner, Art Unit 1793

Jennifer A. Smith
February 9, 2009
Art Unit 1793

JS